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10/664,948	09/22/2003	Kazuya Imafuku	00862.023239.	5741

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EXAMINER	
VO, QUANG N	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/664,948	IMAFUKU ET AL.	
	Examiner	Art Unit	
	Quang N. Vo	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 6/16/04
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshida (USPN 6,169,608).

With regard to claim 1, Yoshida discloses an image processing apparatus for quantizing multilevel color image data containing at least two kinds of color components (column 1, lines 7-10), comprising: error addition means for adding a quantization error value distributed from a neighboring pixel for each color component to each of a plurality of color components contained in a target pixel (column 5, lines 32-43); a threshold table which stores a quantization threshold for each of the color components in accordance with a combination of color component values of pixels (column 5, lines 53-56); modulation amount determination means for determining a threshold modulation amount of each color in accordance with a combination of color component values of pixels including the target pixel (column 2, lines 49-65); and quantization means for acquiring a threshold for each color component from said threshold table in accordance with a combination of color components of the target pixel, determining a threshold modulated by adding the modulation amount to the threshold for each color, and quantizing the target pixel in accordance with a relationship in magnitude between the

modulated threshold and a value of each color component to which an error value is added by said error addition means (column 5, lines 32-43 and column 20, line 37-column 21, line 24).

With regard to claim 2, Yoshida discloses wherein said modulation amount determination means determines a threshold modulation amount for each color in accordance with a combination of color component values of the target pixel (column 2, line 66-column 3, line 15).

With regard to claim 3, Yoshida discloses wherein said modulation amount determination means determines a threshold modulation amount for each color in accordance with a combination of average values, maximum values, or minimum values of color components of the target pixel and a neighboring pixel thereof (column 11, lines 4-14 and column 15, line 65 – column 16, line 12 and figure 11).

With regard to claim 4, Yoshida discloses an image processing apparatus for quantizing multilevel color image data containing at least two kinds of color components (column 1, lines 7-10), comprising: error addition means for adding a quantization error value distributed from a neighboring pixel for each color component to each of a plurality of color components contained in a target pixel (column 5, lines 32-43); quantization means for quantizing each color component of the target pixel (column 2, line 66 – column 3, line 15); and a diffusion coefficient table which stores a diffusion coefficient for diffusing a quantization error produced by said quantization means, in accordance with a combination of color component values of a pixel, wherein said error addition means adds an error value to the target pixel in accordance with a combination

of color components of the target pixel and a diffusion coefficient selected from said diffusion coefficient table (column 5, lines 32-63).

With regard to claim 5, Yoshida discloses wherein said error addition means selects a diffusion coefficient from said diffusion coefficient table in accordance with a combination of color component values of the target pixel (column 6, lines 1-39).

With regard to claim 6, Yoshida discloses wherein said error addition means selects a diffusion coefficient from said diffusion coefficient table in accordance with a combination of average values, maximum values, or minimum values of color components of the target pixel and a neighboring pixel thereof (column 11, lines 4-14 and column 15, line 65 – column 16, line 12 and figure 11).

With regard to claim 7, Yoshida discloses wherein said error addition means selects a diffusion coefficient from said diffusion coefficient table in accordance with a product of color component values of the target pixel and a neighboring pixel thereof (column 5, lines 33-63).

With regard to claim 8, Yoshida discloses an image processing apparatus for quantizing multilevel color image data containing at least two kinds of color components (column 1, lines 7-10), comprising: error addition means for adding a quantization error value distributed from a neighboring pixel for each color component to each of a plurality of color components contained in a target pixel (column 5, lines 32-43); a threshold table which stores a quantization threshold for each of the color components in accordance with a combination of color component values of pixels (column 5, lines 53-56); modulation amount determination means for determining a threshold modulation

amount of each color in accordance with a combination of color component values of pixels including the target pixel (column 2, lines 49-65); quantization means for acquiring a threshold for each color component from said threshold table in accordance with a combination of color components of the target pixel, determining a threshold modulated by adding the modulation amount to the threshold for each color, and quantizing the target pixel in accordance with a relationship in magnitude between the modulated threshold and a value of each color component to which an error value is added by said error addition means (column 5, lines 32-43 and column 20, line 37-column 21, line 24); and a diffusion coefficient table which stores a diffusion coefficient for diffusing a quantization error produced by said quantization means, in accordance with a combination of color component values of a pixel, wherein said error addition means adds an error value to the target pixel in accordance with a combination of color components of the target pixel and a diffusion coefficient selected from said diffusion coefficient table (column 5, lines 32-63).

With regard to claim 9, Yoshida discloses an image processing apparatus for quantizing multilevel color image data containing at least three kinds of color components, wherein a combination of two kinds of color components is quantized by an image processing apparatus defined in claim 1, and a remaining color component is quantized by the image processing apparatus defined in claim 1 with a value of a color component other than a target color component being regarded as 0 (column 6, lines 1-8).

With regard to claim 10, Yoshida discloses an image processing method of quantizing multilevel color image data containing at least two kinds of color components (column 1, lines 7-10), comprising: an error addition step of adding a quantization error value distributed from a neighboring pixel for each color component to each of a plurality of color components contained in a target pixel (column 5, lines 32-43); a modulation amount determination step of determining a threshold modulation amount of each color in accordance with a combination of color component values of pixels including the target pixel (column 2, lines 49-65); and a quantization step of acquiring a threshold for each color component, in accordance with a combination of color components of the target pixel, from a threshold table which stores a quantization threshold for each of the color components in accordance with a combination of color component values of pixels, determining a threshold modulated by adding the modulation amount to the threshold for each color, and quantizing the target pixel in accordance with a relationship in magnitude between the modulated threshold and a value of each color component to which an error value is added in the error addition step (column 5, lines 32-43 and column 20, line 37- column 21, line 24).

With regard to claim 11, Yoshida discloses wherein in the modulation amount determination step, a threshold modulation amount for each color is determined in accordance with a combination of color component values of the target pixel (column 5, lines 48-63).

With regard to claim 12, Yoshida discloses wherein in the modulation amount determination step, a threshold modulation amount for each color is determined in

accordance with a combination of average values, maximum values, or minimum values of color components of the target pixel and a neighboring pixel thereof (column 11, lines 4-14 and column 15, line 65 – column 16, line 12 and figure 11).

With regard to claim 13, Yoshida discloses an image processing method of quantizing multilevel color image data containing at least two kinds of color components (column 1, lines 7-10), comprising: an error addition step of adding a quantization error value distributed from a neighboring pixel for each color component to each of a plurality of color components contained in a target pixel (column 5, lines 32-43); and a quantization step of quantizing each color component of the target pixel wherein in the error addition step, an error value is added to the target pixel (column 2, line 66 – column 3, line 15) in accordance with a combination of color components of the target pixel and a diffusion coefficient selected from a diffusion coefficient table which stores a diffusion coefficient for diffusing a quantization error produced in the quantization step, in accordance with a combination of color component values of a pixel (column 5, lines 32-63).

With regard to claim 14, Yoshida discloses wherein in the error addition step, a diffusion coefficient is selected from the diffusion coefficient table in accordance with a combination of color component values of the target pixel (column 6, lines 1-39).

With regard to claim 15, Yoshida discloses wherein in the error addition step, a diffusion coefficient is selected from the diffusion coefficient table in accordance with a combination of average values, maximum values, or minimum values of color

components of the target pixel and a neighboring pixel thereof (column 11, lines 4-14 and column 15, line 65 – column 16, line 12 and figure 11).

With regard to claim 16, Yoshida discloses wherein in the error addition step, a diffusion coefficient is selected from the diffusion coefficient table in accordance with a product of color component values of the target pixel and a neighboring pixel thereof (column 5, lines 33-63).

With regard to claim 17, Yoshida discloses an image processing method of quantizing multilevel color image data containing at least two kinds of color components (column 1, lines 7-10), comprising: an error addition step of adding a quantization error value distributed from a neighboring pixel for each color component to each of a plurality of color components contained in a target pixel (column 5, lines 32-43); a modulation amount determination step of determining a threshold modulation amount of each color in accordance with a combination of color component values of pixels including the target pixel (column 2, lines 49-65); and a quantization step of acquiring a threshold for each color component, in accordance with a combination of color components of the target pixel, from a threshold table which stores a quantization threshold for each of the color components, in accordance with a combination of color component values of pixels, determining a threshold modulated by adding the modulation amount to the threshold for each color, and quantizing the target pixel in accordance with a relationship in magnitude between the modulated threshold and a value of each color component to which an error value is added in the error addition step wherein in the error addition step, an error value is added to the target pixel in

accordance with a combination of color components of the target pixel and a diffusion coefficient selected from a diffusion coefficient table which stores a diffusion coefficient for diffusing a quantization error produced in the quantization step in accordance with a combination of color component values of a pixel (column 5, lines 32-43 and column 20, line 37- column 21, line 24).

With regard to claim 18, Yoshida discloses an image processing method of quantizing multilevel color image data containing at least three kinds of color components, wherein a combination of two kinds of color components is quantized by an image processing method defined in claim 10, and a remaining color component is quantized by the image processing method defined in claim 10 with a value of a color component other than a target color component being regarded as 0 (column 6, lines 1-8).

With regard to claim 19, Yoshida discloses an image processing apparatus for performing error diffusion processing for multilevel image data constituted by at least two kinds of density components and outputting a result of the error diffusion processing (column 4, lines 53-59), wherein at least one of setting, holding, and using of parameters with respect to an N-dimensional color space is performed on the basis of N kinds of input colors (column 5, lines 48-63).

With regard to claim 20, Yoshida discloses an image processing apparatus for performing error diffusion processing for multilevel image data constituted by at least two kinds of density components and outputting a result of the error diffusion processing (column 4, lines 53-59), wherein a composite color signal is acquired by predetermined

means on the basis of N kinds of input colors, and parameters are set, held, or used on the basis of the composite color signal (column 5, lines 48-67).

With regard to claim 21, Yoshida discloses an image processing apparatus for performing error diffusion processing for multilevel image data constituted by at least two kinds of density components and outputting a result of the error diffusion processing (column 4, lines 53-59), wherein at least one of setting, holding, and using of parameters is performed as an N-dimensional array with respect to an N-dimensional color space based on N kinds of input colors (column 5, lines 48-67).

With regard to claim 22, Yoshida discloses an image processing apparatus including at least one of a threshold, a threshold modulation amount, a density value modulation amount, and an error diffusion coefficient as a parameter in an image processing apparatus defined in claim 1 (column 3, lines 16-35).

With regard to claim 23, Yoshida discloses wherein at least one of a composite value, a maximum value, a minimum value, and a product is used as the predetermined means (column 11, lines 4-14 and column 15, line 65 – column 16, line 12 and figure 11).

With regard to claim 24, Yoshida discloses wherein the predetermined means is applied to at least two input colors obtained from at least one pixel of a target pixel and a neighboring pixel thereof (column 5, lines 48-67).

With regard to claim 25, Yoshida discloses an image processing apparatus for performing error diffusion processing for multilevel image data constituted by at least two kinds of density colors with respect to N kinds of colors, outputting a result of the

error diffusion processing (column 4, lines 53-59), and at the same time, independently performing error diffusion processing with respect to other several colors, wherein at least one of setting, holding, and using of parameters is performed for an N-dimensional color space with respect to the N kinds of colors on the basis of N kinds of input colors, and some of the parameters set for the N kinds of colors are used with respect to said other several colors (column 5, lines 48-67).

With regard to claim 26, Yoshida discloses wherein the plurality of color components comprise cyan and magenta components (column 6, lines 1-8).

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 27-34 are rejected under 35 U.S.C. 101 because it claims a computer programs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang N. Vo whose telephone number is 5712701121. The examiner can normally be reached on 7:30AM-5:00PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler M. Lamb can be reached on 5712727406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Quang Vo

Quang N. Vo 5/9/07
Patent Examiner

TWYLER LAMB
SUPERVISORY PATENT EXAMINER